Lessons Learned Workshop for PI-Led Planetary Science Missions

Independent Review

Lessons Learned

George Pace

April 11, 2006

Selection

is not

Confirmation

Confirmation Process

- **Two step process**
  - **Preliminary Non-Advocate Review (PNAR)**
  - **Non-Advocate Review (NAR) = Confirmation Review**

- **Independent Review Team**
  - **Chartered by IPAO.**
  - **Independent team composed of management, technical, and budget experts from organizations outside of the advocacy chain of the program/project being reviewed.**

- **Out Brief Process**
  - **Post project review snapshot.**
  - **IPAO Peer Review**
  - **PI/Project**
  - **Implementing Organization PMC**
  - **SMD PMC**
  - **NASA APMC**

Excerpts from 7120.5 C

H.1.1.3 Preliminary Non-Advocate Review

- **A Preliminary Non-Advocate Review (Pre-NAR) is an independent review of programs and projects conducted at the end of Phase A. It provides Agency management with** an independent assessment of the readiness of the program or project to proceed into Phase B **and an early assessment of preparations for implementation. Review criteria include assessment of the program's or** *project's concept, programmatic and technical plans* **for execution and** *draft implementation documentation.*

H.1.1.4 Non-Advocate Review

- **A Non-Advocate Review (NAR) is an independent review process of programs and projects conducted at the end of formulation (Phase B). It provides Agency management with** an independent assessment of the readiness of the program or project to proceed into implementation (Phase C)**. Upon successful completion of this review process, a recommended program or project baseline is established. Review criteria include assessment of the program's or** *project's preliminary design, plans for implementation and final implementation documentation.*

Review Process

- Start of PNAR process coincides with Project Review at end of Phase A.

- IRT participation continues during Phase B for subsystem PDRs.

- Start of NAR process coincides with Project PDR.

- Charts and Final Report both now required for both reviews.

- Schedule takes ~ 3 months from Project review to APMC.

Assessment Criteria

- *Alignment with and contributing to the Agency vision and strategic goals.*

- *Adequacy/availability of resources.*

- *Adequacy of schedule and schedule management planning.*

- *Adequacy of technical approach and technical management planning.*

- *Adequacy of risk identification, mitigation and management planning.*

- *Adequacy of Performance Measurement Baseline.*

- **Congressional Certification Criteria**

Backup Charts

Excerpts from 7120.5 C

Guiding Principles of Reviews:

- **<u>Reviews are a resource</u>. They offer an opportunity to add value to the products and to the sharing of knowledge by inviting outside experts that can** provide confirmation of the approach and/or recommend options.

- **<u>Reviews are a tool for communication</u>. They offer an opportunity to organize, assess, and communicate critical data and information between providers, customers, and stakeholders.**

Independent Cost Estimate

- **Price H Model for Hardware**
  - Done at lowest level assembly level available.
  - Predicted Mass (CBE+allocation)
  - Part Type
  - Number and Type of Deliverable Units
  - Industry Average Labor Rates
  - Design Maturity
  - Team Experience
  - Integration Complexity (Electrical and Mechanical)
  - Manufacturing Complexity (Electronics and Mechanical)
  - Reserve based on Monte Carlo to achieve 70% confidence level.
- **SEER CEM Model for Software**
  - Programmer Experience
  - CMMI Level
  - Schedule
  - Estimated SLOC
  - Maturity of SLOC

Excerpts from 7120.5 C

Section	Product	Preliminary NAR	NAR
3.1.c	7120.5 Compliance Matrix and Deviation/Waiver	Deviations/waivers impacting	Final
3.2.d	Project Baseline		Final
3.2.1.2.a 3.2.d 6.2.1.e D1	Project Plan	Preliminary	Final
3.2.1.1 3.2.1.2.b 6.2.1a 6.2.1.b	Project WBS and WBS Dictionary	Preliminary	Final
3.2.1.1 3.2.1.2.c	Integrated Master Schedule		Final
3.2.1.2.d.1	Project Organizational Structure		Final
3.2.1.2.d.2.i	Project Communications Plan		Final
3.2.1.2.d.3	Lifecycle Staffing Plan		Final
3.2.1.2.d.iv	Closed Loop Problem Tracking Plan		Final
3.2.1.2.e	Technology Plan, Including Integrated Technology		Final
3.2.1.2.g	Interagency, Industry, Academic and International Cooperation Agreements		Approved
3.2.1.2.h	Project Acquisition Strategy		Final
3.2.1.2.h	Project Acquisition Plan		Final, prior to initiating major procurements

Excerpts from 7120.5 C

Section	Product	Preliminary NAR	NAR
3.2.1.2.i	Safety and Mission Success Plan		Final
3.2.1.2.j	Education and Public Outreach Plan		Final
3.2.1.2.k.1	Environmental Management Plan		Final
3.2.1.2.k.2.i 3.2.1.2.k.2.iii	NEPA Review and Documentation		Final
3.2.1.2.l.3 3.2.1.2.l.5 6.2.1.i	Emergency Response, Mitigation, Recovery and Contingency Plans		Final
3.2.1.2.n	Export Control Plan, Including Export Control Requirements and Milestones		Final
3.2.2.2.a.1 3.2.2.2.b.1 6.2.2.b 6.2.2.c	Risk-Based LCC Estimate Consistent With Project WBS, Schedule & Performance. Appended to CADRe as Part C.	Project Estimate	NAR Estimate
3.2.3.2.a.1	Systems Engineering Plan		Final
3.2.3.2.b 6.2.3.f	Flight and Ground System Requirements, Including Interfaces, Safety, Reliability,		Validated
3.2.3.2.b 6.2.3.g	Enabling System Requirements, Including Integrated Logistics		Validated
3.2.3.2.d	System Design		Preliminary
6.2.3.e.1	Key Performance Parameters (KPPs)		Goal and Threshold value for each KPP
3.2.3.2.e	Project Verification and Validation Plan		Final

Excerpts from 7120.5 C

Section	Product	Preliminary NAR	NAR
3.2.5.2.a	Project Control Plan		Final
3.2.5.2.b D.3.10	Project Review Plan (A Standalone Review Plan is Required)		Final
3.2.5.2.c	Configuration Management Plan		Final
3.2.5.2.d D.3.3	Risk Management Plan , Including Identification of Primary Risks (A Standalone Risk Mgt Plan is Required)		Final
6.2.3.n	Probabilistic Risk Assessment (For Category I Projects)		Initial
3.4.8.2.b D.3.12	Knowledge Capture Plan, Including Inputs to Lessons Learned Information System		Final
6.1.f 6.2.2 H4	Cost Analysis Data Requirement (CADRe) Parts A and B (For Category I and II Projects)	Preliminary	Final
6.2.1.f	Software Management Plan, as applicable		Final
6.2.3.b	Operations Scenarios and Concepts, Mission Profiles, and Mission Operational Modes		Baseline
6.2.4.c	Significant Risk List		Final